Japan Quality since1968

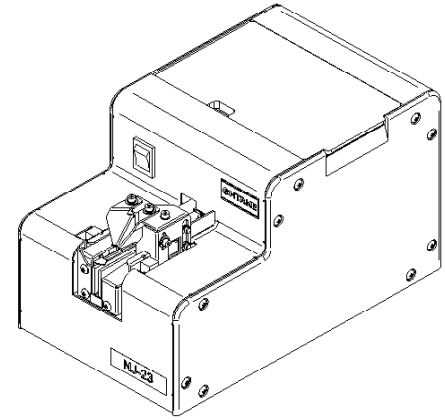
OHTAKE

Automatic Screw Feeder

自動ネジ供給機

NJ^2 Series

Operation manual (Maintenance)



・Read these instructions for the proper use of this machine.
・After having read these instructions, keep them in a convenient place so you or the operator can refer to them whenever necessary.

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NJ2MA01M

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1. Before Use

Thank you for purchasing the NJ^2 Series Automatic Screw Feeder. Before using this machine, make sure that the following accessories are supplied with the machine.

Accessories Instruction manual x 1 AC adapter x 1 Allen wrench x 1 Screwdriver x 1

To obtain the optimum performance from this machine, it is essential that you thoroughly read this manual.

2. Operating Precautions

Installation

CAUTION

Install this machine at a level, steady place.
If you install this machine in an unstable location, it may topple or fall, causing personal injury.

CAUTION

Do not operate this machine in places where flammable or explosive gas exists or with high humidity.
Using this machine in such locations will create a safety hazard.

When shutting down this machine at the end of day or leaving it unused for long periods of time

CAUTION

When shutting down this machine at the end of day or, leaving it unused for long periods of time, disconnect its AC adapter from the power outlet.

AC adapter

CAUTION Use the AC adapter attached only.

Rail

Do not scratch the rail. Do not apply any oil or grease to the rail.

Incompatible screws

Use specified screws only. Avoid using screws to which oil, grease, dirt, or other foreign matter is attached.

Screw access precautions

When picking up screws, exercise care not to apply any undue force or shock.

Avoid foreign objects

CAUTION Do not position your fingers or foreign objects in the screw bin, holes, or other open spaces as it may cause personal injury. Be sure that no inappropriate screws or foreign objects is dropped into this machine.

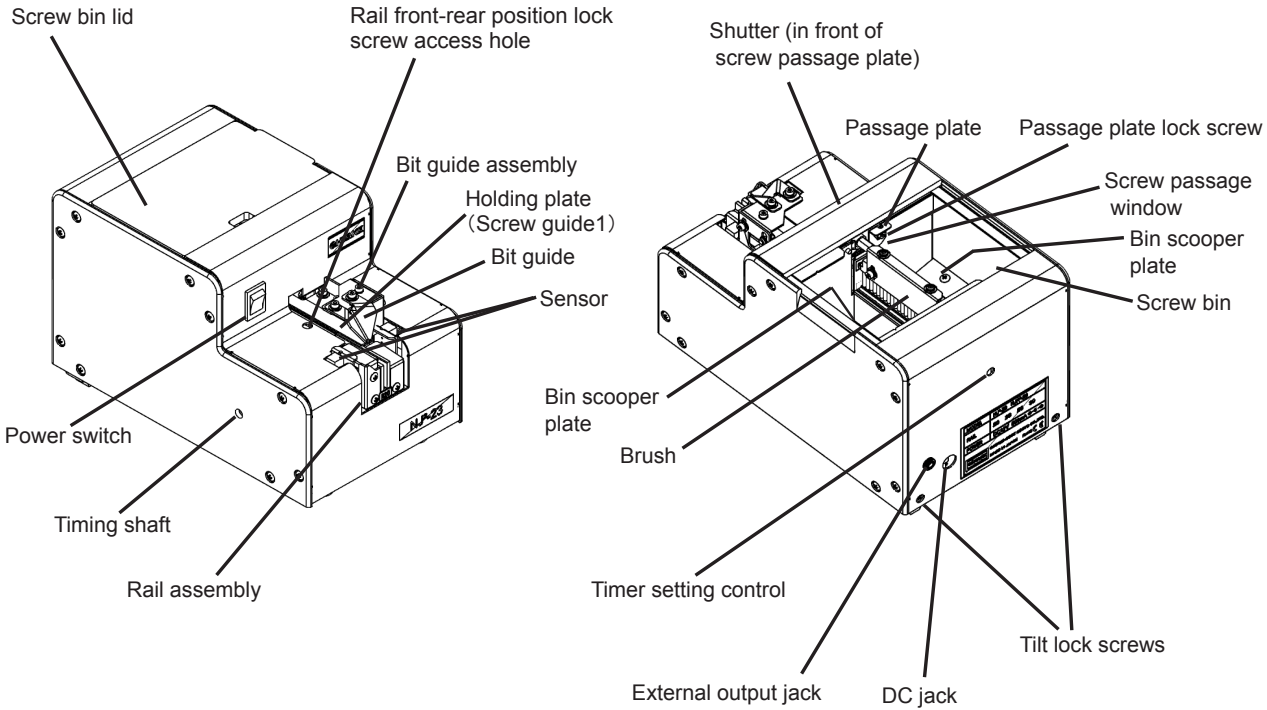
Abnormalities during operation

CAUTION If any abnormality or troubles occur during operation, turn off the power switch and disconnect the AC adapter from power outlet.
If you continue to operate the feeder while it is acting abnormally, a risk of fire, electric shock, or personal injury may occur. If you encounter any abnormality, contact your local dealer.

Do not make attempt to repair, disassemble, or modify this machine

CAUTION When this machine is in need of repair, contact your local dealer.

3. **Component Names**

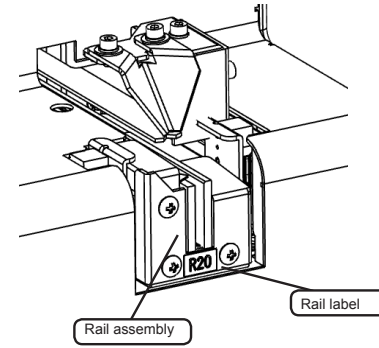


4. Checks and Adjustments before Operation

4-1. Confirming the machine's Model Number

Before using this machine, verify that the model matches the screw size to be used.
To confirm the model number, note the labels attached to the rail assembly . The identification label marking is in R** form.
This machine can be converted to different screw sizes by replacing the rail assembly, and the passage plate. When you replace component parts, verify the actual screw size to be used.

Type	Model number	Screw nominal diameter	Rail model number	Passage plate model number
NJ^2-23	NJ^2-2320	φ2.0	R20	W2320
	NJ^2-2323	φ2.3	R23	W2323
	NJ^2-2326	φ2.6	R26	W2326
	NJ^2-2330	φ3.0	R30	W2330
NJ^2-45	NJ^2-4535	φ3.5	R35	W4540
	NJ^2-4540	φ4.0	R40	
	NJ^2-4550	φ5.0	R50	W4550



NOTE: Replacement rails, escapers, and passage plates are available as options.）

This machine is factory adjusted for pan-head screws prior to shipment. If readjustments are needed to match the screw applied, complete the following check/adjustment procedures before using this machine.

-Checking and adjusting the brush
-Checking and adjusting the holding plate (screw guide 1)
-Checking and adjusting the passage plate
-Checking and adjusting the rail assembly

CAUTION Before performing any adjustment procedures, please turn off the power

4- 2. Checking and Adjusting the Brush

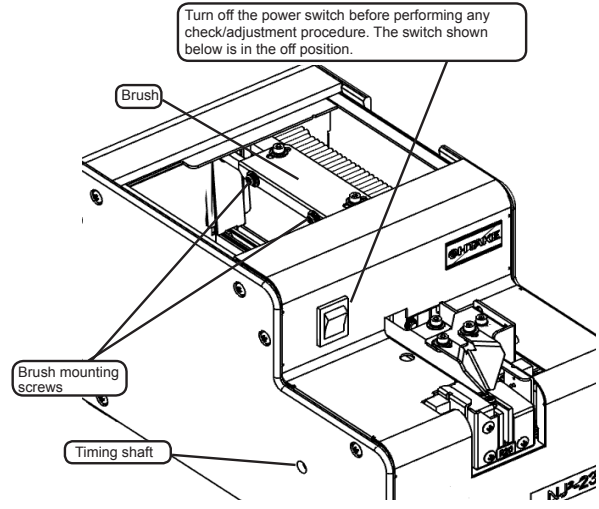
Check the height of the brush. Ensure that the brush check/ adjustment procedure is completed while the brush is placed in a horizontal position as shown at right. To place the brush in a horizontal position, rotate the timing shaft with the Allen wrench supplied with the machine.

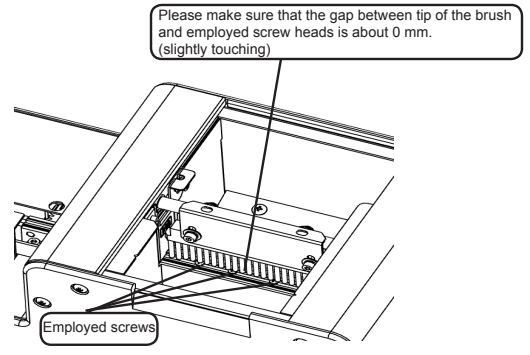
Please prepare the screws to be used. Drop a few of them into the rail groove, check and adjust the brush height as directed below.

After the brush is placed in a horizontal position as shown on right, rotate the brush. Adjust height of the brush, so that the gap between tip of the brush and screw heads is approximately 0 mm.

If any adjustment is needed, perform the following procedure:
Loosen the brush mounting screws.
Make adjustments so that the tip of the brush is slightly touching-screw heads. In this instance, avoid lowering the brush too much.
At completion of adjustment, tighten the brush mounting screws.

After the brush is properly adjusted, rotate it again to verify that it smoothly moves without any obstruction.

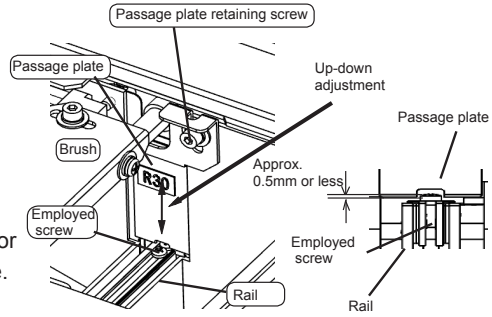

Turn off the power switch before performing any check/adjustment procedure. The switch shown below is in the off position.
Brush
Brush mounting screws
Timing shaft


Please make sure that the gap between tip of the brush and employed screw heads is about 0 mm. (slightly touching)
Employed screws

4- 3. Checking and Adjusting the Passage Plate

Drop few screws into the rail groove. Slide the screws to the passage window section and check or adjust the passage plate height. Check that the clearance between the passage window upper end and the screw heads is not greater than about 0.5 mm and that the screws can pass the passage window. If the above requirements are not met, repeat above adjustment procedures as needed.

After adjustment is completed, tighten the passage plate retaining screw. If the screw applied has a relatively short shank, fine adjustments may be needed. For screws having a relatively long shank, however, coarse adjustments will suffice.



4- 4. Checking and Adjusting the Holding Plate (Screw Guide 1)

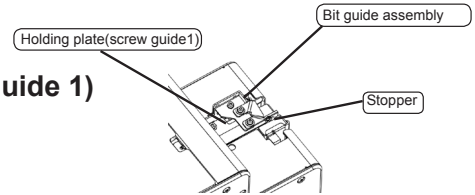
Drop 5 to 10 applied screws into the rail groove.

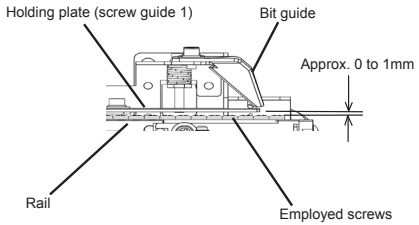
Tilt the machine or operate it so that the screws are delivered to the rail assembly stopper.

If the shutter is closed or there is no clearance between the holding plate (screw guide 1) and screw heads, the screws will not be able to move. The screws can go through when the shutter is open with an adequate clearance provided between the holding plate (screw guide 1) and screw heads.

When the clearance is 0 to 1 mm, the holding plate (screw guide 1) height needs no further adjustment.

NOTE: If the rail stopper captures a screw and brings the vibration to a stop immediately, adjust the timer setting control on the rear side of the unit.





If the holding plate (screw guide 1) height needs to be adjusted, proceed as directed below.

Tilt this machine or operate it so that the screws are delivered to the rail assembly stopper. If there is no clearance between the holding plate (screw guide 1) and screw heads, the screws cannot move. The screws can move while the shutter is open with an adequate clearance provided between the holding plate (screw guide 1) and screw heads.

If the screws do not move to the escaper section, loosen the bit guide assembly retaining screw, and rotate the bit guide assembly up-down adjustment screw counterclockwise with the accessory Allen wrench to move the holding plate (screw guide 1) upward.

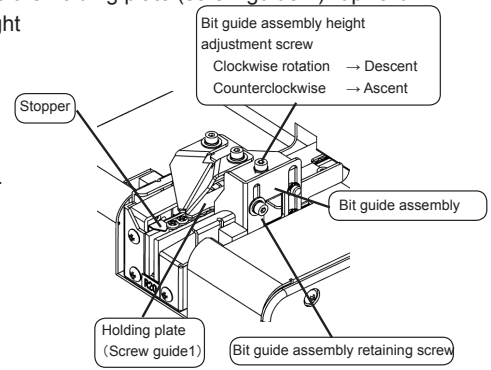
Adjust the holding plate (screw guide 1) height by rotating the bit guide assembly height adjustment screw to provide a clearance of 0 to 1 mm between the holding plate (screw guide 1) and the head of the screws.

When performing the above adjustment procedure, make sure that the gap between the holding plate (screw guide 1) and rail is uniform. Please make sure that the gaps between the holding plate and the rail are the same on the rear end and the front end.

After completion of adjustment, be sure to tighten the bit guide assembly retaining screw.

If the employed screw has a relatively short shank, fine adjustments are needed.

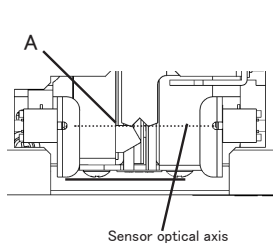
For screws having a relatively long shank, however, coarse adjustments will suffice.

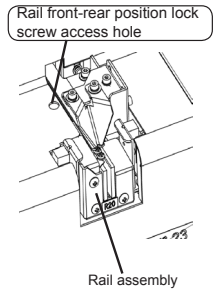


4-5. Checking and Adjusting the Rail Assembly

Check the position of the stopper and sensor.

- Ensure that the rail is fixed so that "A" portion of the stopper is 0mm to 0.5mm ahead of the sensor optical axis.
- If adjustment is necessary, adjust it front and rear by loosening the rail front-rear position lock screw





4- 6. **Checking and Adjusting the Bit Guide**

Place five to ten screws in the rail and tilt this machine until they hit the stopper on the rail assembly.

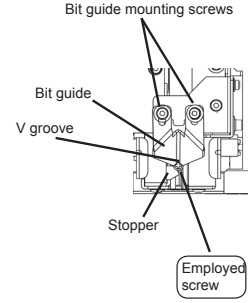
When the internal shutter is closed, the screws cannot go through the passage plate.

If it is closed, turn the timing shaft clockwise with the Allen wrench to keep it open.

The stopper is fixed to the rail assembly. The adjustment of the stopper is made by moving the rail assembly front and rear. If the “V” groove on the bit guide and the rear point of the Phillips screw head are not aligned, adjust as follows:

Loosen the bit guide mounting screw with the Allen wrench and move the bit guide forward and back to put them in alignment.

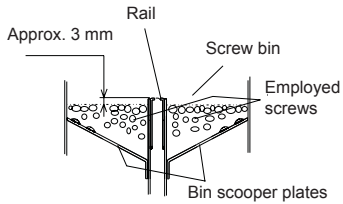
Please remember to tighten the screws after adjusting.



5. Operating Procedures and Operational Checks

5-1. Loading the Screws

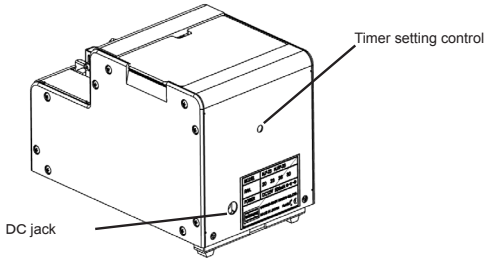
Open the screw bin lid. While the bin dipper plates are at the lowest position, pour in the screws until they are piled up to about 3 mm below the rail upper surface. Make sure that screws are equally distributed into the right-and left-hand bins.

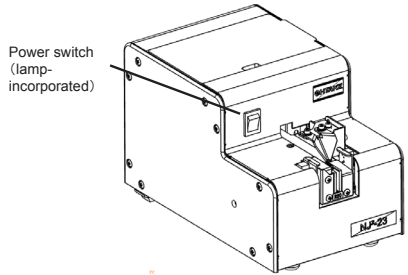


CAUTION Do not load the screws to excess amount.

5-2. Operating this machine

Connect the accessory AC adapter plug to the DC jack on the rear of this machine, and the other side to a power outlet.
Turn on the main power switch. The lamp incorporated in the power switch will illuminate.
Turning on the power switch causes the drive motor to rotate normally, the bin scooper plates to move up and down, and the rail to vibrate. After a while, the loaded screws are sequentially transported along the rail and delivered to the stopper. If the screw is not picked up for an extended period of time, the vibration will automatically come to a stop. At the moment the screw is picked up, this machine resumes operation.





Operational features

This machine is equipped with an overload protection circuit.

If a movable part is overloaded during a feeder operation, for instance, when a small screw or other particles is trapped, or excessive screw is placed into the screw bins, the overload protection circuit will activate.

Function descriptions and remedies

Under normal conditions, the drive motor in this machine rotates in normal direction to feed the loaded screws continuously to the escaper section, thereby allowing you to obtain the screws successively. However, if any movable section is overloaded, the drive motor will rotate in reverse direction for a predetermined period of time and then resumes its normal rotation. When the cause of the overload is eliminated upon motor reversal, the motor reverts to its normal rotation, resuming normal screw supply.

If the cause of the movable section overload is not cleared upon motor reversal, the overload protection circuit performs the reverse rotation and normal rotation repetition cycle for a predetermined period of time and then shuts off power supply to the drive motor.

When the power to the drive motor shuts off as above, please turn off the power switch and clear the cause of overload. For instance, when the screw bins are overloaded with screws, reduce the number of screws in the bins. If a screw or other article is trapped in a movable section, please remove it with tools. After the cause of the overload is eliminated, turn the power switch back on (power-on reset) and resume operation.

This machine is equipped with a timer.

The timer setting can be adjusted according to the screw type.

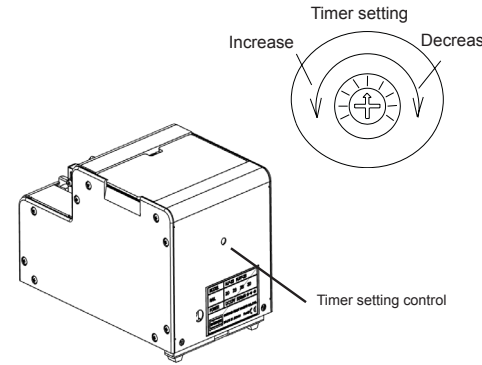
Function descriptions

The actual screw feeding speed varies with screw type.

This machine continues running while there is no screw in the screw removal area of the escaper section. It stops its operation when a predetermined period of time elapses after a screw is retained in the removal section. This duration of time can be adjusted with the timer setting control on the rear of the feeder.

It is recommended that you decrease the timer setting when the feeding speed is high, and increase the setting when the feeding speed is slow.

When adjusting the timer setting, please exercise care and do not rotate the control beyond its permissible range.



This machine is equipped with an external output signal connector.

The incorporated signal cable enables you to obtain a signal that indicates whether a screw is present in the escaper section screw removal area.

[Function]

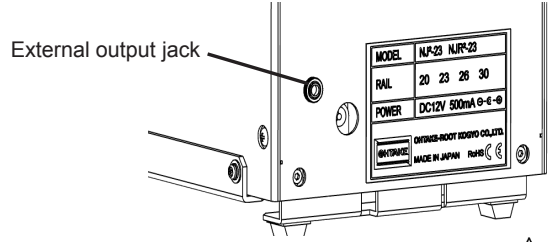
When picked screw up : signal high (ON) approx. 0.2sec
Incoming current : shall be limited to less than 100mA
CAUTION : Additional resistor is required on external circuit for regulating current

[Capacity]

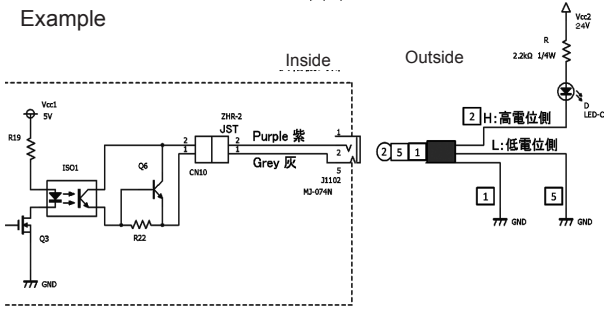
MAX DC current : 100mA
External supply voltage : 5 to 24VDC（max27VDC)

[CAUTION]

Please use φ3.5-3mm micro-type single plugs.
Recommended type : Marushi electric Mfg.
MP-019LC(Straight type)
MP-012LN(Right angle type)
Recommended connector cable : Marushi electric Mfg.
SC420S-2M-RS



Example



This machine is equipped with a tilting mechanism

When the screw feeding speed is too slow, you can install this machine in a tilted position.

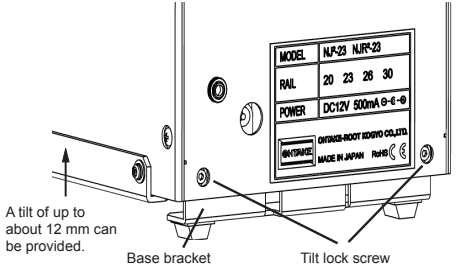
Descriptions

Loosen the tilt lock screws.

Pull out the base bracket from the rear of the feeder and fix it in an appropriate position.

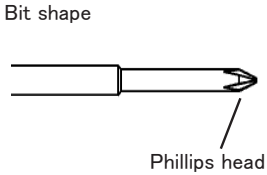
After this machine is tilted, make sure that it is steady.

Please do not tilt this machine beyond the capacity of its tilt mechanism.



5- 3. **Picking up the screw**

Attach a bit to your electric screwdriver to match the head of the screw. Refer to the following.



Standard	Screw normonal diameter	Cross size on top No.
JIS small screw	ϕ 2.0	No.1/No.2
	ϕ 2.3	No.1/No.2
	ϕ 2.6	No.1/No.2
	ϕ 3.0	No.1/No.2
	ϕ 3.5	No.1/No.2
	ϕ 4.0	No.2
	ϕ 5.0	No.2

Notice: The screwdriver bit must be magnetized before use.

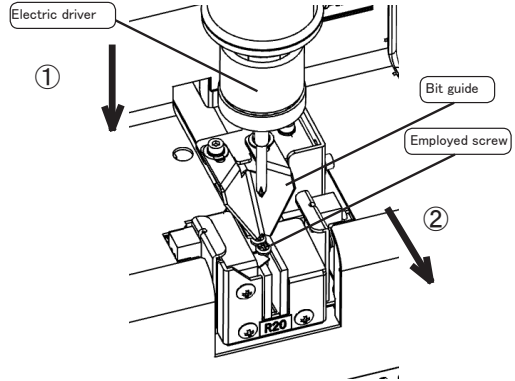
Put the driver bit somewhere above the opening of the bit guide, and push it straight down while turning the bit slightly, until it hits the screw head.

Vibration of the rail shall stop when the screwdriver bit reaches the bottom of the screw head slot.

Then pull the screw out towards yourself.

Be careful not to push the screwdriver bit into the screw head with too much force. If the driver is lowered into the screw head with moderate force, vibration of the rail shall stop.

Do not use more pressure than necessary to stop movement of the rail.



6. **Maintenance**

CAUTION Before performing any maintenance, turn off the power switch and remove all the loaded screws from this machine.

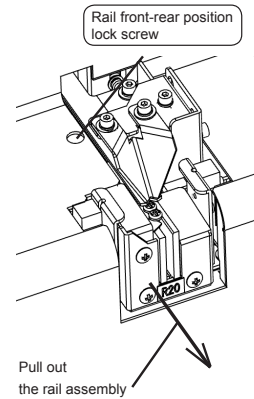
6- 1. Cleaning the Rail and Rail Guide Wall

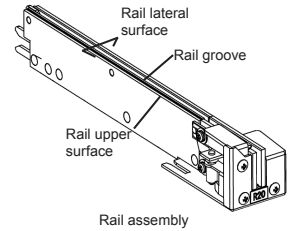
When the rail groove becomes dirty, the screw feeding speed may be affected. If such situation occurs, wipe the rail groove clean with a thin, clean cloth moistened with alcohol.

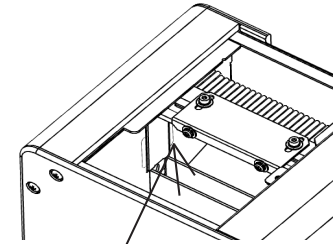
If the rail groove is heavily soiled, remove the rail assembly and then perform cleaning.

Loosen the rail position lock screw and then pull the rail assembly forward and out.
With a thin, clean cloth moistened with alcohol, wipe clean the rail groove and upper and lateral surfaces of the removed rail assembly.
With a thin, clean cloth moistened with alcohol, wipe clean the rail guide wall surface, which is revealed upon rail assembly removal.

After cleaning, reassemble the rail section by reversing the removal procedures above.
Adjust the rail assembly position.(Refer to 4-5)







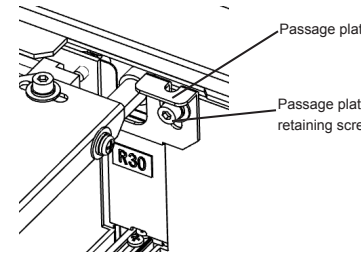
6- 2 **Replacement Procedures**

●Replacing the rail assembly

The rail assembly of this machine can easily be replaced.
If the loaded screws do not smoothly feed after cleaning or if you intend to use a different screw diameter, replace the rail assembly.
For the replacement procedure, see the earlier section on cleaning.

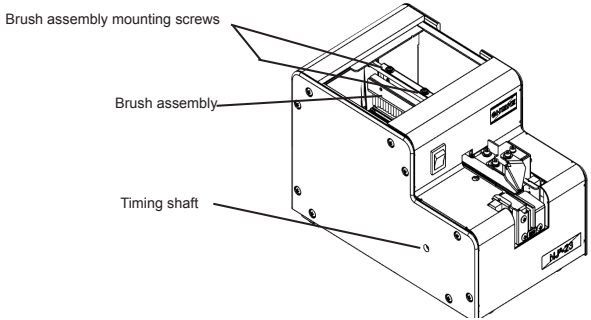
●Replacing the passage plate

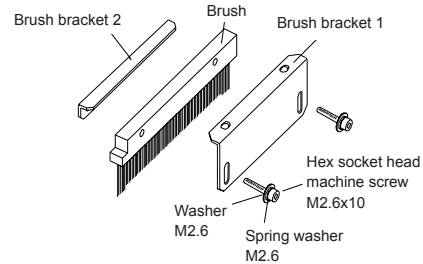
This machine allows you to change the screw diameter setup by replacing associated components.
(this change can be made with the same OHTAKE feeder machine).
To change the screw diameter, you have to replace the passage plate in addition to the rail assembly.
To replace the passage plate, remove its retaining screw.
Replace the passage plate in such a manner that the brush is horizontally positioned as shown at right.
Exercise care not to lose the retaining screw.



●Replacing the brush

If the ends of the brush bristles are worn out so that improperly oriented screws cannot be swept away, please replace the brush.
To replace the brush, please position it as shown below. You can also adjust its position by rotating the timing shaft.
Remove the brush assembly mounting screws and then the brush assembly. You can disassemble the brush assembly. After the brush is replaced, install the brush assembly by reversing preceding steps.





Brush assembly exploded view

Parts number：NJ02005a #02

All the above replacement parts are available as options. When they need replacement, contact your local dealer and specify the machine model number, part names, and part model numbers.

Type	Model number	Screw nominal diameter	Rail model number	Passage plate model number	Brush model number
NJ^2-23	NJ^2-2320	φ2.0	R20	W2320	NJB0400
	NJ^2-2323	φ2.3	R23	W2323	
	NJ^2-2326	φ2.6	R26	W2326	
	NJ^2-2330	φ3.0	R30	W2330	
NJ^2-45	NJ^2-4535	φ3.5	R35	W4540	
	NJ^2-4540	φ4.0	R40		
	NJ^2-4550	φ5.0	R50	W4550	

NOTE 1: Different screw sizes may be applicable with exchanging parts.
NOTE 2: To change the screw size (nominal diameter), replace all the parts indicated at left.
NOTE 3: The replacement rails, escapers, passage plates, and brushes are available as options.

7. **Troubleshooting Guide**

CAUTION Before taking any action, please turn OFF the power switch.

Problem	Cause	Remedy
7-1 The machine does not start when power switched on.	-No power is supplied. -The screw in the removal section has not been removed for a predetermined period of time.	-Ensure that the AC adapter is properly connected to a power source. -Remove the screw from the removal section. Adjust the timer setting control.
7-2 Loaded screws do not feed.	-Diameter of the loaded screw does not match the rail size. -The number of screws in the screw bins is too low. -The brush cannot sweep an oddly oriented screw away from the passage window section. -A screw shank has been trapped in the passage window. -An abnormally oriented screw is stuck in the rail section. -The rail does not vibrate (a screw or foreign object is trapped in a gap). -The timer setting control is not properly adjusted.	-Change to the machine that is suitable for the screw size. Use the rail that fits the screw. -Load additional screws into the screw bins. -Adjust the brush. Adjust the passage plate. The problem may also be cleared by adding some screws to the screw bins -Remove any oddly oriented screw and then adjust the passage plate. -Remove the oddly oriented screw as indicated below. Loosen the bit guide assembly retaining screw,shift the holding plate (screw guide 1) upward, and remove the abnormally oriented screw. After screw removal, readjust the holding plate (screw guide 1). -Remove the trapped screw or foreign matter. -Adjust the timer setting control.
7-3 A screw has been trapped in the rail groove.	-The diameter of the loaded screw does not match the rail size. -The total length of the loaded screw is less than the rail groove opening width.	-Switch to the machine that is suitable for the screw size. Use the rail that fits the screw. -the problem cannot be remedied. Please consider another automatic screw feeder series.

Problem	Cause	Remedy
7-4 The screws on the rail do not feed smoothly.	-The clearance between the holding plate (screw guide 1) and screw heads is insufficient. -Dirt, oil, or grease is attached to the rail. -The rail fails to vibrate due to a screw or foreign object trapped in the opening.	-Shift the holding plate (screw guide 1) upward. Use the Quicher in a tilted position. Adjust the timer setting control. -Clean the rail and rail guide. -Remove the trapped screw or foreign object and then clean the rail and rail guide.
7-5 Oddly oriented screws occasionally travel through the passage window. A screw shank easily gets caught in the passage window.	-The passage plate is improperly adjusted. -The employed passage plate does not match the applied screw. -The forward-descending tilt of the machine is above the permissible limit.	-Readjust the passage plate. -Use the passage plate that matches the applied screw. -Adjust the tilting angle,make sure it is within the permissible limit.
7-6 Screws are not transported to the removal section.	-Screws are stopped in the middle of the rail section. -Screws are not smoothly delivered from the rail to the front stopper.	-Readjust the holding plate (screw guide 1). -Readjust the passage plate.
7-7 The bit doesn't match the Pillips head.	-The rail assembly is improperly adjusted. -The bit guide is improperly adjusted.	-Readjust position between the rail and bit guide.

Problem	Cause	Remedy
7-8 The machine comes to a sudden stop.	-The overload protection circuit is activated. -The screw in pick-up section has not been removed for a long period of time.	-Turn the power switch off and then back on. If the operation comes to a stop again, the probable causes are: There are too many screws in the screw bin. --> Adjust the number of screws in the screw bins. A screw or foreign object is trapped in the movable section. --> Remove any trapped screw or foreign object. -Pick up the screw.
7-9 The bin scooping plates fail to stop moving when there is the screw in pick-up section.	-The timer setting control is improperly adjusted.	-Readjust the timer setting control.
7-10 Screws have been dropped inside the machine.	-The holding plate (screw guide 1) is improperly adjusted. -The front-rear position of the rail is improperly adjusted.	-Readjust the holding plate (screw guide 1). -Readjust the front-rear position of the rail.

8. **Main Specifications**

Exclusive adapter (Switching type)	Input :AC100～240V 50/60Hz Output :DC15V
Dimension	134W X 215D X 139H (mm)
Weight	Approx.3kgf
Screw capacity	150cc
Accessories	Operation manual x1 AC adapter x1 Allen wrench x1 Screwdriver x1

NOTES

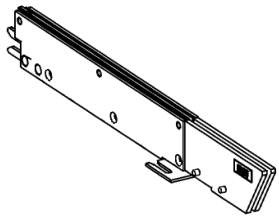
-Measure the shank diameter of the screw to be used, and check whether it matches the rail groove reference dimension.
-Within the range of screw size and length below, there may be instances of unique screw shape or structure not compatible with the feeder unit. Please consult the distributor or manufacturer for further infomation.
-To change the screw size (nominal diameter), replace all the associated replacement parts.
-The replacement rail, escapers, passage plates, and brushes are available as options.
-The product design, performance characteristics, and other specifications are subject to change and improvement without prior notice.

Applicable Screw Reference Table						Screw head shape						
						Pan head						
Screw nominal diameter	Screwshaft diameter (mm)	Screwhead diameter (mm)	Washer diameter (mm)	Screw head height (mm)	Screw length (under head portion) (mm)	Sems	Double sems	Washer head	Bind	Flat	Counter -sunk	Hexagon flange bolt
φ2.0	1.8～2.1	3.0～ 6.8	3.0～ 9.8	0.5～5.5	2.6～18	O	O	O	O	O	O	O
φ2.3	2.1～2.4	3.0～ 6.8	3.0～ 9.8	0.5～5.5	2.9～18	O	O	O	O	O	O	O
φ2.6	2.4～2.7	3.6～ 6.8	3.6～ 9.8	0.5～5.5	3.2～18	O	O	O	O	O	O	O
φ3.0	2.8～3.1	4.0～ 6.8	4.0～ 9.8	0.5～5.5	3.6～18	O	O	O	O	O	O	O
φ3.5	3.3～3.7	4.8～10.7	4.8～13.2	0.5～8.0	4.1～18	O	O	O	O	O	O	O
φ4.0	3.8～4.3	5.4～10.7	5.4～13.2	0.5～8.0	4.6～18	O	O	O	O	O	O	O
φ5.0	4.8～5.1	6.2～10.7	6.2～13.2	0.5～8.0	5.6～18	O	O	O	O	O	O	O

Type	Model number	Screw nominal diameter	Rail model number	Passage plate model number	Brush model number
NJ^2-23	NJ^2-2320	φ2.0	R20	W2320	NJB0400
	NJ^2-2323	φ2.3	R23	W2323	
	NJ^2-2326	φ2.6	R26	W2326	
	NJ^2-2330	φ3.0	R30	W2330	
NJ^2-45	NJ^2-4535	φ3.5	R35	W4540	
	NJ^2-4540	φ4.0	R40		
	NJ^2-4550	φ5.0	R50	W4550	

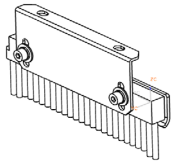
○Replacement parts

Rail

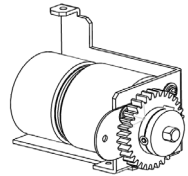


Passage plate

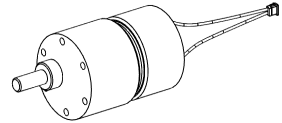
Brush assembly：NJ02005a #02



Motor drive assembly：NJ04500e#01



Motor：NJ09582a #05



9. **Warranty**

For users within Japan, the product is covered by warranty for a period of six months after the date of delivery. Such warranty will not be applicable to purchase or users outside of Japan. If it should become faulty, however, please contact your local dealer.
Solutions to the following situations may be implemented at a reasonable charge without regard to the warranty period.

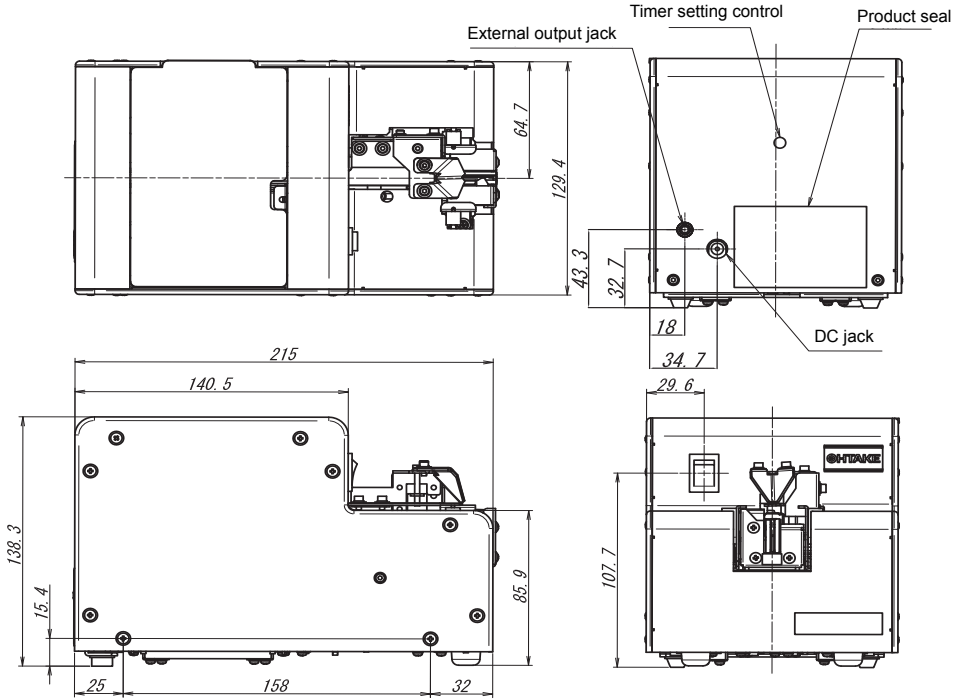
- -Defects caused by misuse.
- -Defects caused by product modifications or unauthorized repairs.
- -Defects caused by natural disasters or Acts of God.
- -Defects caused by a factor external to the product.
- -Cost of replacement of consumable parts (brush and motor) and replacement parts (brush, rail assembly, passage plate, and escaper) including the cost of such parts.

After production of repair parts is discontinued, they shall be kept available for at least 5 years.

After this period, additional services may be available upon request.

Please consult with your local dealer, or our service center for further information.

10.External dimension



[unit: mm]

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(as of November, 2014)
(2014 年 11 月現在)